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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/713,307

11/14/2003

Hitesh Windlass

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BLAKELY SOKOLOFF TAYLOR & ZAFMAN
12400 WILSHIRE BOULEVARD
SEVENTH FLOOR
LOS ANGELES, CA 90025-1030

EXAMINER

WILCZEWSKI, MARY A

ART UNIT	PAPER NUMBER
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2822

MAIL DATE	DELIVERY MODE
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05/04/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/713,307	Applicant(s) WINDLASS ET AL.	
	Examiner M. Wilczewski	Art Unit 2822	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 February 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) 22-29 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on November 14, 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date: _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date: _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This Office action is in response to the Amendment filed on February 6, 2007.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 6, 9, 11, 12, 19, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cook, Pub. No. 2002/0181072, of record.

Cook et al. disclose forming a polymer material on a substrate, see figure 20. The polymer material contains particles of a material which have one or more domains, see paragraphs [0005], [0009], [0011]-[0012], which can be aligned, see paragraph [0014]. Cook discloses that it is desirable to reduce the number of domains in a particle by heating the material to above the Curie temperature of the material and applying an electric field, and allowing the particles to cool, see paragraph [0019]. This also aligns the particles and cooling the material while maintaining the material while maintaining the electric field "locks" the particles in their aligned state, see paragraphs [0085]-[0086].

Claims 1 and 12 have been amended to require a ferroelectric polymer material. Cook discloses that the material of the particles can comprise a ferroelectric polymer, see paragraphs [0001]-[0002] and [0077]. In paragraphs [0001] and [0002] Cook

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teaches the photorefractive materials used in the disclosed method are typically crystals, but can be **polymers**. Subsequently in paragraph [0077], Cook teaches that ferroelectric photorefractive crystals of different shapes could be used in the disclosed method. It would have been obvious to one skilled in the art, in light of these teachings, that ferroelectric photorefractive polymers could also be used in the known method of Cook, since Cook discloses that the photorefractive material can be a polymer.

Claims 2, 4, 7, 8, 13, 15, 17, and 18 are again rejected under 35 U.S.C. 103(a) as being unpatentable over Cook, Pub. No. 2002/0181072, as applied to claims 1, 6, and 12 above, further in view Weiner, U.S. Patent 3,490,050, of record.

Cook is applied as above. Cook lacks anticipation of the apparatus used to heat the material and the apparatus used to align the particles in the material. Weiner discloses a method in which particles are aligned using an electric field, see Summary of the Invention. The apparatus used to practice the method of Weiner is shown in figure 1. The apparatus includes a heating chamber in which the material and substrate are disposed and capacitor plates 18 and 19 for inducing an electric field. It would have been obvious to one skilled in the art to use the apparatus disclosed by Weiner in the known method of Cook to heat the polymer material and align the particles in the polymer material, since Weiner discloses this as a use of his apparatus. Weiner does not disclose the claimed strength of the electric field, see column 3, lines 38-43. However, in any case, it would have been an obvious matter of design choice bounded by well known manufacturing constraints and ascertainable by routine experimentation

and optimization to choose the particular claimed electric field because applicant has not disclosed that the limitations are for a particular unobvious purpose, produce an unexpected result, or are otherwise critical, and it appears prima facie that the process would possess utility using another electric field. Moreover, it has been held that limitations directed to processing parameters such as electric field strength are prima facie obvious absent a disclosure that the limitations are for a particular unobvious purpose, produce an unexpected result, or are otherwise critical.

Claims 3, 10, 14, and 20 are again rejected under 35 U.S.C. 103(a) as being unpatentable over Cook, Pub. No. 2002/0181072, as applied to claims 1 and 12 above, further in view of Szmanda et al., Pub. No. 2004/0131862, of record.

Claims 5, 7, 16, and 17 are again rejected under 35 U.S.C. 103(a) as being unpatentable over Cook, Pub. No. 2002/0181072, further in view Weiner, U.S. Patent 3,490,050, as applied to claims 4 and 15 above, further in view of Szmanda et al., Pub. No. 2004/0131862, of record.

Neither Cook nor Weiner disclose that the polymer material comprises poly(vinylidene fluoride-trifluoroethylene). However, Cook does disclose that the material of the particles can comprise a ferroelectric polymer, see paragraphs [0001]-[0002] and [0077]. Vinylidene fluoride-trifluoroethylene is a well-known ferroelectric polymer, see paragraphs [0004], [0013]-[0016] of the Szmanda et al. Patent. Szmanda et al. teach that domains of vinylidene fluoride-trifluoroethylene polymers can be aligned using an electric field, see paragraphs [00031] and [0033]. Szmanda et al. also disclose

the Curie temperature of ferroelectric polymers, see paragraph [0034]. Szmanda et al. also teach an annealing treatment for ferroelectric polymers that includes heating the polymer material above the Curie temperature for 1 minute to 12 hours, see paragraph [0036]. In light of the teachings of Szmanda et al. it would have been obvious to one skilled in the art that a vinylidene fluoride-trifluoroethylene polymer could be used in the known method of Cook, since vinylidene fluoride-trifluoroethylene polymers are well known polymers in the art which can be given a permanent electric polarization using an electric field, as used in the known method of Cook. In addition, Cook has disclosed that his method is applicable to ferroelectric polymers. Given the use of the ferroelectric polymer vinylidene fluoride-trifluoroethylene in the known process of Cook, it would have been obvious to one skilled in the art that the processing parameters disclosed by Szmanda et al. could be used in the process of Cook.

Response to Arguments

Applicant's arguments filed February 6, 2007, have been fully considered but they are not persuasive. Independent claims 1 and 12 have been amended to require a ferroelectric polymer material. Applicant has argued that Cook does not teach using a ferroelectric polymer material. However, Cook clearly teaches that polymers can be used, see paragraphs [0001] and [0002]. In paragraphs [0001] and [0002] Cook teaches the photorefractive materials used in the disclosed method are typically crystals, but can be **polymers**. Subsequently in paragraph [0077], Cook teaches that ferroelectric photorefractive crystals of different shapes could be used in the disclosed

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method. Given the disclosure by Cook that ferroelectric photorefractive materials can be used in the disclosed method of Cook, it would have been obvious to one skilled in the art, in light of paragraphs [0001] and [0002], that ferroelectric photorefractive **polymers** could also be used in the known method of Cook, since Cook discloses that the photorefractive material can be a polymer.

Furthermore, Applicant has argued that Cook discloses the use of doped lithium niobate in his disclosed method which is not a ferroelectric polymer. It has been well established that a reference is not limited to its specific embodiments, but, rather, can be used for all that it teaches. As pointed out above, in light of the teachings of Cook, it would have been obvious to the skilled artisan that a ferroelectric polymer could have been used in the disclosed method of Cook.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to M. Wilczewski whose telephone number is (571) 272-1849. The examiner can normally be reached on Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Zandra Smith can be reached on 571-272-2429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



M. Wilczewski
Primary Examiner
Tech Center 2800